

2008
2009

Fowl plague (influenza)

def → Contagious acute viral
dis. of A' & human
ch' by → severely pandemic

Etiology → Orthomyxovirus

Source

- in bird → digestive & resp. T
- in mammals → resp. T.
- So, sicked bird / Meat egg
Source of infection
- during evisceration of poultry
- infected Meat product
(Fresh or Frozen)

Mode of Transmission

- direct contact through m.m.
- indirect contact

Blood protozoa (d & e)

2008
2009

African plague (African Trypanosomiasis)

Etiology

- Trypanosoma gambiensi → vector → glossina palpalis
- T. rhodesiensi → vector → glossina morsitans
- T. brucei → glossina spp

Reservoir

- in T. gambiensi & T. rhodesiensi →
- Blood of infected person
- domestic farm A' → ruminant

Source

Infected ♀ tse-tse fly

Mode of Transmission

A) **Cyclic Transmission**

→ biological Transmission
by bite of infected
Tse-Tse fly
(Meta zoonotic dis.)

B) **Direct Mechanical Transmission**

by → infected bl.
→ Mouth part
of glossina

Tse-Tse Fly infected by biting sick host
↓
Trypanosoma taken with bl. into midgut
of insect (1p → 20-40 days) then
migrate through intestine → passing up
in space bet. peritrophic m. & gut wall
to proventriculum here. They re-enter
lumen → multiply → reach
Salivary gland

dis. in Man

- influenza like symptom with fever
- headache, pyrexia, Arthralgia, myalgia, prostration
- Nasal discharge
- unproductive cough
- Complication :-
 - primary pneumonia due to viral infection.
 - 2nd pneumonia due to bacterial infection.

* prevention & Control

- Notification of disease
- Avoid contact with dis. bird
- hygienic disposal of dead bird.
- apply protective measure (mask, glasses, gloves)
- during exam. must wear eye glasses
- washing hand after handling poultry
- Avoid eating any product contain raw egg
- chemotherapy → Amantadine hydrochloride.

during this migration, They go through morphological & pathological changes (The infective Metacyclic Form)

dis. in [] an

- at site of bite, red, swelling, edema
- fever, irregular erythematous rash
- LV → posterior enlarged at Neck
- CNS → Meningoencephalitis
 - ↑ hrs of sleep (african sleeping sickness)
 - change in personality.
 - slurred speech, seizure
 - circadian arrhythm
 - difficult in walking & talking

* prevention & Control

- Control fly by, chemical insecticide
- Mechanical
 - Trapping handnet
 - fly paper
- use repellent.
- prevent acc. of refused Matter near A house.
- public education
- diagnosis ETT
- Ttt by → D inj Antypol → before meningoencephalitis
- ② IV of Trypanosome or arsobal → drug of choice

Q. Medical approach done to a child/person bitten by rabid dog in his leg ?? 2008, 9, 10

Q. Prevention & Control of Rabies ?? 2011

① prevention rabies in patient who is already infected

- A) preventive measures.
- B) Management of biting A
- C) Management of Bitten A
- D) Bat control

→ E) prevention of human rabies ^{2008, 2011}

→ ① pre exposure prophylaxis
 → 1-3 doses of HDC vaccine on days → (0, 7, 21, 28)

→ ② post exposure prophylaxis :-
 → local treatment of wound
 → vaccination
 → Anti-rabies serum.

③ prevention measures:-

- mass vaccination of owned dogs.
- eliminated stray dogs
- in Area free from rabies
 Should → prohibit importing dogs
 → apply quarantine measure
- health education of people

④ Elimination of the virus in dogs & other animals

- prophylactic immunization of dog against rabies
- Milk from suspected cow should be boiled or pasteurized
- oral vaccine effective in free ranging carnivore population

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⑤ Management of biting A

- biting A observed by vet for → 10 days
- if infected & signs appear → killed.
- brain send to lab. examination

③ Management of bitten A' by known rabied A'

- ① destroyed immediately
- ② if owner not destroy it \Rightarrow it should isolated in kennel for 6 M
- ③ if A' vaccinated previously within one year \rightarrow revaccinated & restraint for 30 days.

④ Bat Control \Rightarrow by bat brood building.

[E] prevention of human rabies

② post-exposure prophylaxis

A) local Ht of wounds

- cleaning \rightarrow removal of infective material by washing or scrubbing
- Cauterization \rightarrow by quaternary ammonium compounds (i.e. QAC)
 \Rightarrow Getaulon
- Suturing \rightarrow delayed (after 3 days) to allow bleeding & drainage
- specific antirabies serum \rightarrow 40 IU/kg B.wt \approx maximum 300 IU/kg
- Anti-tetanic serum & penicilline.

B) Vaccinations

- ① Hodge's vaccine \Rightarrow s/c injection of fresh fixed diluted virus followed by gradual $\uparrow \uparrow$ of conc.
- ② phenolized vaccine \Rightarrow 14 inf. with a dose of 5ml 11/7
- ③ Etherized rabies vaccine \Rightarrow inactivated of fixed virus.
- ④ chick embryo vaccine (Flying strain vaccine) \Rightarrow virus passed through brain of chick embryo \rightarrow diluted 35% to become safe for inj

5 → inactivated duck embryo vaccine (DEV) ⇒
→ pass fixed virus in duck embryo → inactivated by BPL
→ supplied as lymphilized vaccine with diluted.
→ inject. 1ml given S/C For 5 dose (1, 3, 7, 14, 18)

6 → cell culture vaccine (human diploid cell vaccine) ⇒
→ fixed virus pass in diploid cells WI-38 (derived from human embryo lung fibroblast).
→ inactivated with ⇒ B-probiolacton (BPL)
→ give 1ml I/I
→ by use with it ⇒ Rabies human immunoglobulin with dose 20 IU
→ 10 IU. with a vaccine
→ 10 IU. infiltrated around the bite around wound. site.

7 → Freezing brain & spinal cord of rabbit using G₂ snow placed in vacuum disector over H₂SO₄ →
dne at -18 °C then powder packed in ampoules & emulsified salt solution (I/I → injection)

Anti-Rabies Serum

→ Horse anti-rabies serum ⇒ 40 IU/kg with Max. dose 3000 IU. ←

→ human rabies immunoglobulin ⇒ 20 IU/kg.

pneumorrhettiosis
(Q Fever)

def → Acute, febrile, global distribution disease.

Ch by → Acute febrile course
↓ Atypical pneumonia
↓ Absence skin rashes

Etiology

Coxiella burnetii
 reservoir → vector → wooden Tick

reservoir

→ Cattle, sheep, goat, dog, bird → excretion, secr.

Source

- infected domestic A & their Product
- dried tick Bites through scratch
- Tick, lice, Mite, parasite Flies
- Transovarian Transmission

Mode of Transmission

- inhalation of droplets, dust, aerosols
- ingestion raw or contaminated milk
- Farm worker through A⁻ parturition
- lab workers.

pneumo encephalitis
(Newcastle, pink eye)

(def) → highly contagious viral dis.
of bird chby → pneumonia
↳ encephalitis

Etiology

* RNA \rightarrow G. paramyxovirus
 \rightarrow F. paramyxoviridae

* Acc. to virulence & pathogenicity

- \rightarrow lentogenic (Lasota-Hitchner)
- \rightarrow mesogenic (Kamarov)
- \rightarrow velogenic (Hechts)

Reservoir

→ wild bird → original reservoir
 → turkey, ducks, chicken → reservoir → Man

Source

- virus secreted in all sec. & excretion of infected birds
- Nasal discharge
- during vaccination (aerosol or powder)

Mode of Transmission: ^{Powder}

- via aerosols
- through m.m. of eye, nasopharynx
- during vaccine administration
- contact by rubbing of eye after handling of virus

Signs in Man

- rapid & sudden onset fever
- malaise, profuse sweating, anorexia, myalgia, nausea
- Atypical pneumonia
 - dry non-reproductive cough & chest pain.
 - by x-ray, patchy consolidation ^{in lung}
- severe headache, retroorbital pain
- complication → Endocarditis

prevention & Control

- A → Vet. prevention measure →
- eradication of ticks by diazinon
 - suppression dust & cultivation of trees.
 - Quarantine measure for newly introduction
 - vaccination of A'

B → Medical prevention / Medicine:-

- Complete boiling Milk.
- patient isolated & take chlorotetracycline.
- Vaccination:-
 - Killed cultured vaccine
 - Formaline inactivated vaccine.

Signs

- pink eye.
- conjunctivitis, lacrimation, congestion, pain, swelling
- Subconjunctival ~~Time~~ ^{of}
- edematous eyelid.
- Bleeding in scleral tissue
- pre-auricular L.N. swelling.
- with no systemic reaction
- recovery within 1 week. ← S.O.I

prevention & Control

- Stand & hygiene & routine vaccine
- limitation of movement of birds.
- visitors to farm → limited
- precaution during handling of virus.

Q 2015 Impore

Avian flu & pneumocephalitis

Q discuss in detail one of the most important intracellular protozoal arthropod-borne zoonotic disease.
Ch by Cutaneous & visceral Form in Man? 2008, 2009

Leishmaniasis

(Blood protozoan)

	① Cutaneous Leishmaniasis	② visceral Leishmaniasis or Black Fever	③ American Leishmaniasis or Mucocutaneous & pharyngeal leishmaniasis
Cause	① Moist Form → <i>L. tropica</i> var major ② dry Form → <i>L. tropica</i> var minor ③ Sudan Form → <i>L. nilotica</i>	<i>L. donovani</i>	<i>L. braziliensis</i>

Source Bite of infected sand Fly →

Made of Transmission	<p>① <u>Cyclic Transmission</u> → sand fly become infected after 5-10 days by taking blood meal from infected host spp. which contain intracellular leishmaniasis within lymphocyte into midgut of fly then formation & multiplication of flagellated leptomonas stage then flagellated metacyclic form (infective stage) which migrate to mouth part of insect</p> <p>② <u>Direct mechanical Transmission</u> - by → mouth part of sand fly or other bl. sucking insect.</p>
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Disease in Man	<p>① <u>Moist Form</u> - (IP → 1 wk - 2H) → local edematous papule → ulceration → papule surround by tubercle → LN, LV → regional lymphadenitis & lymphangitis</p> <p>② <u>Dry Form</u> - (IP → 5M) → at site of bite → copper colored spot appear develop tubercle → necrosis in center → covered by brown crust when remove, leave ulcer.</p>	<p>→ IP, 2-3M → irregular fever → splenomegaly, hepatomegaly → bleeding from gum & mm, internal organ → skin, mm → dark → death.</p>	<p>→ granuloma mass → associated with ulcerating infection.</p>
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2. prevention & Control Leishmaniasis:-

- Complete destruction of Sand Fly.
- prevention of accumulation of garbage & refuse material near houses of A.
- Education of The public
- Active immunization & → (with)
 - live vaccine of *L. Donovanii* =
 - using scraping from active lesion of native people (cutaneous Leishmaniasis) ← in case of
- specific ttt by → neostibosan IV or IM 7. injection.

Q. one of most important intercellular protozoal
metazoonosis? P 2013

Trypanosomiasis

① African trypanosomiasis
(African plague)

- Caused by →
- ① *T. gambiensi* vector → *glossina palpalis*
 - ② *T. rhodensiensi* → *glossina morsitans*
 - ③ *T. brucei* → *glossina spp*

③ American Trypanosomiasis
(Chagas disease)

- Caused by \rightarrow
T. cruzi vector Kissing bugs

باقی ۷۸
Source, reservoir, Mode of Transmission, Signs in Man, prevention

clinical signs

① disease in child (Congenital)

1 → Cerebral intra cranial Calcification, hydrocephalus, Chorio-retinitis

2 → Calcification in eye & brain
• blindness → cause
• deafness

3 → The child may be born alive or dead -

• If born alive → suffer from serious mental retardation

• Fever, splenomegaly, hepatomegaly, hepatosplenomegaly.

4 → Encephalomyelitis.

② Acquired infection

→ Meningo-encephalitis
Encephalomyelitis
→ retino-choroiditis

→ Ocular Toxoplasmosis

→ lymphadenopathy
& lymphocytosis

③ infection in adult

→ Acute Febrile Condition

→ Typhoid

→ Typical diffuse interstitial pneumonia

prevention & control

① All women with history of spontaneous abortion, premature labour, dead fetus → must exam. by Lab method.

② If possible pregnant women should avoid change cat litter or pans

③ public education, personal hygien, periodical exam. Cat. (pet A)

④ TTT -

→ women who acquire infection during pregnancy treated with
(Sulfonamides + pyrimethamine)

→ serologic testing for pregnant women at beginning of gestation because → pyrimethamine is Teratogenic

→ TTT in first trimester of pregnancy → sulfonamides only

Q. Congenital Toxoplasmosis in Man? 2009

Q. parasite borne zoonosis transmitted to man by various routes of Transmission & Mainly ch by abortion in pregnant women. P.P 2013, 44, 13

Blood transfusion

Toxoplasmosis

Etiology

→ *Toxoplasma gondii* (obligatory intracellular parasite)

Q. Toxoplasmosis is wide spread in nature due to →

- ① *Toxoplasma* not specific to certain class of A
- ② have possibility of infecting different organ
- ③ it leave body in its infective stage
- ④ It is resistant to outer environmental change
- ⑤ have different modes for transmission by, ingestion bite, air

Source

- Cat Feces contain oocyst
sporulated in ext. environment
- Eating raw meat of sheep, goat, pig, cattle contain Tissue cyst.
- eating fresh uncooked pork or contaminated food with sec. of excretion of infected A
- *T. gondii* secr. & excr. in urine, feces, milk, saliva, trace
- infected woman fetal blood & foetal bl.
- infection pass through Milk & colostrum
- bl. Transfusion

Mode of Transmission

- ingestion of tissue cyst ①
- insufficiently cooked or raw meat
- consumption contaminated food with cat feces
- consumption of raw goat Milk
- Blood Transfusion

Reservoir

→ all Mammals & Animals.

	Endemic Typhus Fever	Boutonneuse Fever	Rickettsial pox (vesicular rickettsiosis)
Etiology	Rickettsia typhi (vector) → rat fleas → x. cheopis → rat louse → poly pleur x spinosis → human fleas → Culex irritans	R. Coxi (vector) → Brown dog tick	R. Acari (Mite born disease)
Source	reservoir → domestic rats (Rattus rattus norvegicus) → Rattus rattus rattus → infected rat flea → " Human flea	→ rodents → dogs → brown dog tick	→ mite
Mode of Transmission	① Mo in interstitial flea without damage flea ② excretion of flea → feces (No in saliva) ③ by scratching skin but No bite of flea ④ inhalation of dried feces causing infection ⑤ contact of m.m. ⑥ ingestion contaminated food with urine of flea.	Brown dog tick	→ mite biting & defecation → mite biting & defecation.
Signs in Man	→ IP → 6-14 days → Acute febrile condition, severe headache & nervousness → Skin rashes → appear as rose red macule on lower chest, arm, shoulder, back & thigh → rose on → face & palm of hand.	→ small reddish ulcer → maculopapular at 4th day of fever → mortality 3-1.	→ chills & sweating → rash & skin lesion → firstly, small papule → vesicle covered by dark scab → fever for 7 days with vesicular rupture → later → maculo-papular eruption • (not causing itch) • on any part of body except palm of hand.
Prevention & Control	① destruction of rodent & fleas ② ttt with chlortetracycline, chloramphenicol, streptomycin	→ prevention & control → using acaricides against vector on dog & bedding	→ prevention & control → using acaricides as DPT

20/2 Endemic typhus fever

- * Caused by *Rickettsia mooseri* (typhi)
- * Zoonotic disease
- * Rat → Rat flea → Rat & Man
- * Weil felix test → +ve
- * Neil-mooser test → +ve

Epidemic typhus fever

- *R. prowazneti*
- Not zoonotic.
- * Can body louse (louse) → Man
- * +ve
- * -ve

	FTID	HFMID
	Zoonotic disease	non zoonotic
Etiology	<ul style="list-style-type: none"> • epitheliotropic RNA • <i>Flaviviridae</i> • <i>Aphthous virus</i> 	<ul style="list-style-type: none"> • <i>Flaviviridae</i> • <i>Coxsackie virus</i>
Source	<ul style="list-style-type: none"> * all secretion & excretion of A infected. • Milk & Saliva, rodent. 	<ul style="list-style-type: none"> * Stool & Nasal secretion
Mode of Transmission	<ol style="list-style-type: none"> ① Contact with Saliva Contain virus ② ingestion of contaminated Milk & byproducts 	<ol style="list-style-type: none"> ① Sneezing of infected Patient.
Signs	<ul style="list-style-type: none"> → Fever, vesicle on Mouth → dry mouth 	<ul style="list-style-type: none"> → Fever, sore throat → Blister like formation around Mouth & palm of hand.

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	Milker's nodules (Milker's wart) (pseudo cow pox) ²⁰¹⁸	Apthus Fever (FMD) ^{2015 2014}	Vesicular stomatitis (VS) (pseudo FMD) ^{2011, 13, 14, 15}
Etiology	<ul style="list-style-type: none"> epitheliotropic DNA virus pseudo cow pox virus 	<ul style="list-style-type: none"> epitheliotropic RNA virus F. picarnaviridae → Aphthous virus serotype → O, A, SAT_{1,2,3}, Asia 	<ul style="list-style-type: none"> epitheliotropic, arthropod RNA virus F. rhabdoviridae → vesicular virus serotype → Indiana, Indiana I, Colorado, Argentina, New Jersey, Alagoas
Reservoir	<ul style="list-style-type: none"> Cattle → esp. milking. Buffalo 	<ul style="list-style-type: none"> Cattle, buffalo, Sheep, goat, pig. 	<ul style="list-style-type: none"> Cattle, horse, swine wild A fly → rodent, sheep
Source	Nodules & lesion Found on teat of A	<ul style="list-style-type: none"> Vesicular fluid contain virus ingestion milk product contain FMDV. rodent. 	<ul style="list-style-type: none"> saliva & vesicular content or fluid of infected A virus transmitted by <ul style="list-style-type: none"> phlebotomus spp (sandfly) horse or stable fly mosquitoes.
Mode of transmission	direct contact with lesion of cow & abrasion of milker's hand.	<ul style="list-style-type: none"> ingestion contaminated milk product. direct contact with salivary secretion contact of abraded skin & erosion with saliva. 	<ul style="list-style-type: none"> occupation of disease. bitting of insect in lab → nasopharyngeal method Not by ingestion.

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- Rift valley Fever (RVF)
- Hemorrhagic Fever in Man
- Enzootic hepatitis in sheep

(Etiology) → F. Bunyaviridae
G. Filibovirus (RNA)
(pantropic virus)

(Reservoir) → domestic → sheep, goat, cattle, camel, man

[Source] → Vector → Aedes, Culex, Anopheles
→ Aborted fetus

(Mode)
→ Occupational contact → handling, inhalation
→ Biting of Mosquitoes
→ lab workers, accidental.

* Disease in Man

- Flu-like illness (1st 2-6d)
 - headache, malaise
 - death or complication

→ Complication

① Occulal Form (after 5-15d)

→ loss of central vision with bilateral retinal damage

② Hemorrhagic Form (2-4d after Fever)

→ Fever, jaundice, severe bleeding, hematemesis & pet. H. on skin, melatenesis

③ Meningeal Form (5-15d after Fever)

→ encephalitis, drowsiness, lymphocyte in CSF

Yellow Fever Black vomit disease

(etiology) → F. Togaviridae
→ Flavivirus group B
→ RNA arbovirus

(Source) → infected arthropod vector

① in Africa → adult? Aedes africanus
→ " " " Simpsoni
→ " " " aegypti

② in South America → Aedes leucocelanus
→ Haemagogus spp.

(Mode)

→ Bite of infected arthropod vector
* 3 different cycles

① Sylvan & Jungle cycle of Yellow Fever

Monkey → ^{mosquitoes} → Monkey
Aedes albopictus, A. Simpsoni

② Rural cycle of yellow fever

Monkey → vector → Man
near village

③ Urban cycle of fever yellow

Man → vector → Man
(Aedes spp)

NB) Yellow Fever CH Ws

- Fever
- Liver destruction
- Acute hepatic & renal involvement with → Jaundice, Hemorrhage, Eproforis, Hematemesis, Melena

Signs & Sym	<p>→ IP → 5-7 days.</p> <p>→ 2 type of lesion on hands.</p> <p>① papule → vesicle → pustule → crust → heal</p> <p>② Nodule begin as papule surrounded by erythematous area → gradually enlarged, firm, elastic firm, bluish red, painful & itching. Nodule</p> <p>→ swelling axillary L.N</p>	<p>→ IP → 2-7 d.</p> <p>→ signs similar to those in A</p> <p>→ eruption of vesicle on buccal mucosa → generalized vesicular lesion on mouth & hand</p> <p>→ Not fatal except in very weak child due to 2nd complications</p>	<p>→ Flu-like symptoms</p> <p>→ 25% of cases → vesicle (hard like) on gum, pharynx, nose, oral cavity</p> <p>→ with stomatitis then nausea, vomiting, diarrhea</p> <p>→ severe headache, dullness</p>
Prevention & Control	<p>→ Care taken before milking</p> <p>→ HH → Dermazin Cream 1%</p>	<p>① Quarantine, restrict A's movement</p> <p>② hygienic disposal of infected A's</p> <p>③ " " of inanimate object</p> <p>④ disinfection by 1% NaOH 2-5% NaOH</p> <p>⑤ vaccination →</p> <ul style="list-style-type: none"> • Tissue culture vaccine • Formaline inactivated virus vaccine <p>⑥ pasteurization of Milk</p> <p>⑦ rodent control</p> <p>⑧ wearing gloves & protective clothes</p>	<p>→ protective clothes for people in contact with sick A's</p> <p>→ worker in labs → precaution during handling.</p> <ul style="list-style-type: none"> → avoid production aerosol → protective clothes & goggles <p>→ Avoid movement of infected A's</p> <p>→ destruct of arthropod mechanically by drying of canal</p> <p>→ Vaccination →</p> <ul style="list-style-type: none"> → Attenuated virus vaccine.

* Prevention & Control

- Eradication Mosquitoes
- Education
- Vaccination of A
 - Live vaccine in endemic
 - Killed vaccine in free area pregnant.
- Human protection vaccination by

Signs in Man

- Fever, chills, headache, backache
- renal & liver tissue destruction → Jaundic, epistaxis.
- Black vomite → Hemorrhage from mucosa of stomach & Hematemesis.
- Melena → pass dark colored stools

* Prevention & Control:-

- eradication of mosquitoes by Nets
- Fumigation of houses using (D D Thoy + Formalin)

* Compare

- * African plague & Fowl plague 2009, 2008
- * African flu & pneumocephalitis 2015
- * pneumorickettsiosis & pneumocephalitis 2008
- * vesicular stomatitis & vesicular rickettsiosis 2011
- * Miller's warts & vesicular stomatitis 2013
- * FID & vesicular stomatitis 2014, 2015
- * Q Fever & Hemorrhage fever in Man 2009
- * yellow fever & Boutonneuse fever 2009
- * yellow fever & Black fever 2010
- * yellow fever & Q fever 2011
- * explain common signs of yellow fever in Man? 2013
- * Epidemiological of Rift valley fever as zoonotic viral dis? 2013
- * Giardiasis & Amoebiasis 2009, 2010, 2012

	① Giardiasis (Traveler's diarrhea)	② Amoebiasis (Amoebic dysentery)	③ Balantidiasis (balantidial dysentery)	④ cryptosporidiosis
etiology	→ <i>Giardia lamblia</i> = " <i>intestinalis</i> (in) → duodenum & Jejunum	→ <i>Entamoeba histolytica</i> " <i>Coli gingivalis</i> ↓ (in large intestine)	→ <i>Balantidium coli</i>	* <i>Cryptosporidium parvum</i>
Source Reservoir	* Source → Feces contain cyst * reservoir: → can → wild, domestic A'	→ Food contaminated by hand of infected & carrier → sewage → contain Mature 4 nucleated cyst → vegetables grown on soil fertilized by human excreta → Flies → dogs	→ stool of infected man or → Feces of pig & Monkey ↓ containing cyst	* Source & Reservoir ↓ ① direct contact with Feces of sick A' & human ② indirect transmission by ingestion Food or water contaminated by Human or A' Feces ③ Fecal-Oral transmission
Mode of transmission	→ ingestion Contaminated water or Food with cyst (Food-borne infection) → direct transmission (hand to mouth Transfer)	① ingestion Mature 4 nucleated cyst (with) Contaminated Food or water	① as Amoebiasis ② occupational disease	

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Symptoms

- GIT manifestation →
- epigastric pain
- nausea & vomiting
- bloating
- chronic diarrhea
- They recurrent episodes with pale greasy stool
- elimination of cyst in feces → intermittent

- penetration of intestinal wall results in Flask shaped ulcer
- The primary site in colon
- Tender palpable thickening of cecum & descending colon
- Abdominal pain
 - discomfort
 - heavy diarrhea altered with constipation
 - chronic diarrhea with bloody mucus

- Chronic rare acute
- infect large intestine similar to Amoebic dysentery →
- Abdominal pain
- diarrhea altered with constipation
- Chronic diarrhea with bloody mucus
- Complication →
- Colitis colitis leukocytes blood
- invade l.u. of mucosa & submucosa → ulceration, severe enteritis

- Self limiting disease
- watery diarrhea (4-6x/day)
- Cholera like diarrhea

Prevention & Control

- public water supply protected against sewage pollution
- not H.H. by Metronidazole
- specific H.H. Antimal

- Cyst pass into lymphatic & mesenteric vessels & other tissue of body
- Complication →
- liver → Abscess, Necrosis
- lung, brain → Abscess
- Colon → Abscess, ulceration, Necrosis
- (penetration & spread)
- Detailed food hygiene
- Sanitary disposal of human stool & excreta
- Disease food handler exam.
- H.H. →

- H.H. Metronidazole (Flagyl)
- H.H. of Amoebiasis →
- Flagyl, ceftriaxone
- 65 mg ceftriaxone intravenous + ceftriaxone 1g
- avoid red use emetine hydrochloride in heart

- good personal & food hygiene
- Isolation of patient in hospital
- Concurrent disinfection of feces
- Control inf. →
- Avoid food/water contamination

Q. How parasite enters human body?? 2009, 10, 11, 12, 15

I Passive introduction or penetration of parasite into body by oral route

→ when infective stage of parasite (cyst, oocyst, egg, larva) present in feces of infected person/animal through contamination of finger, food, drinking water → cyst of *amebina*, *Balantidium coli*, oocyst of *Cryptosporidium parvum*, egg of *Echinococcus granulosus*

→ through uncooked food →
• *Trichinella spiralis*
• *T. saginata*, *T. solium*

→ through swallowing (Accidentally)
→ *H. diminuta* in Rat flea
→ *D. caninum* in dog flea

II Active penetration of skin by infective stage of parasite

1) From moist soil
→ Hook worm
→ Strongylius

2) From water
G.I. flukes
Schistosoma

3) Following deposition of M.O. into skin by obligatory or mechanical vector

1) *Trypanosoma cruzi*
2) filarial worm by B.L. sucking flies

III introduction of parasite into skin by obligatory host

(e.g.)

1) Malaria parasite by Mosquitoes

2) African Trypanosome by Tse-Tse fly.

IV Skin contamination by infective stage of parasite

→ direct contact from a reservoir e.g.
Sarcoptes scabiei from horse & possibly other domestic A.

→ eggs or larvae deposited on skin by Myiasis producing fly
as *Oestrus ovis* (sheep bot)
→ *hypodermabovis* (cattle bot)

Q. Arthropods play an important role in maintaining some zoonotic disease or public health hazards? 2015, 6
 a) explain the role played by each vector & their causative agent. 8, 9, 10

Disease	Causative agent	Arthropod	Role of arthropod.
① Q. Fever	Coxiella burnetii	tick, lice, Mite	→ biting of man Transovarian Transmission
② Endemic Typhus Fever	Rickettsia typhi	→ Rat Flea → human Flea	Rat Flea bite human through wound.
③ Boutonneuse Fever	Rickettsia conorii	• brown dog tick • Rhipicephalus sanguineus	• Bite of Tick • Transovarian Transmission
④ Rickettsial pox	Rickettsia acari	• Mite • Allodermomyzus sanguineus	Bite of Mite • Transovarian Transmission
⑤ Vesicular Stomatitis	arthropod borne virus	→ phlebotomus → Stable Fly	• Biting of fly • Mechanical Transmission
⑥ West Nile Fever	• arthropod borne virus • Flavivirus	• Mosquitoes as → Aedes → Culex	Biting of infected Mosquitoes
⑦ Sindbis Fever	→ arthropod borne virus • Alphavirus	• Mosquitoes as → Culex	Biting of infected vector
⑧ RVF	• pantropic Arbovirus → phlebovirus	→ Culex → Aedes	Biting of infected vector.
⑨ Yellow Fever	→ Arbovirus Flavivirus	→ Aedes aegypti → Forest mosquitoes	Biting of infected ♀ vector only

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⑩ Dengue Fever	Flavivirus Arbovirus →	Aedes aegypti	Biting of infected vector
⑪ Japanese encephalitis	Flavivirus Arbovirus →	Culex	biting of infected vector
⑫ Crimean-Congo haemorrhagic Fever	Bunyavirus arbovirus →	Tick → hyalomma dermacenter	Biting of infected tick
⑬ Dipylidiasis	Dipylidium caninum	Ctenocephalides canis contain Cysticercoid stage	• dog flea contain Cysticercoid stage
⑭ Trypanosomiasis	T. gambiensi T. bruce	Glossina palpalis Glossina tachnoides	Cyclic & Mechanical Transmission
⑮ Leishmaniasis	Leishmania spp.	Sand Fly	Cyclic & Mechanical Transmission.

Q. Compare bi. obligatory cyclozoonosis & Saprozoonosis ? 2008

Obligatory cyclozoonosis	Saprozoonosis
<ul style="list-style-type: none"> * Host must be one of vertebrate host * Ex → T. solium T. saginata 	<ul style="list-style-type: none"> * disease need invertebrate host & environment * infectious agent undergoes certain developmental stages. * Ex → Fascioliasis → Snail vegetable

NB * Fish Fluke → ① Clonorchiasis
② Opisthorchiasis
③ Paragonimiasis
④ Metrophysiasis
* Fish borne parasite → ①, ②, ③, ④, ⑤ Diphylobothriasis
⑥ Anisakiasis.

Q. discuss in details one of the transboundary anthropozoonotic metazoosis that ch by → Fever, ocular & flu like manifestation in man? 2005, 2006.

Rift Valley Fever

Q. discuss in details an important zoonotic disease which is key responsible for transmission & ch by → hemorrhage syndrome in man? 2006

Yellow Fever

Q. Discuss in details an important rickettsial zoonotic disease ch by → Absence of rash in Man? 2010, 14, 15, 16

Q Fever

Q. discuss in details one of the most important intra cellular metazoosis disease? 2011, 2013, 2016

intra cellular Metazoosis as →

leishmaniasis

Rickettsial disease

① spotted fever group
Rickettsial pox
Boutonneuse fever

② Typhus group
Endemic Typhus
Fever

③ other group
Q. Fever

* فقط مهمة جداً المحالين وحولك عادل بييجها *

- * Intracellular Metazoonosis → Leishmaniasis
→ Rickettsial disease
- * Inter cellular / Metazoonosis → Trypanosomiasis
- * obligatory intracellular protozoae → Toxoplasmosis
- * obligatory cyclozoonosis → Taeniasis
- * Non obligatory cyclozoonosis → Hydatidosis
- * Saprometazoonosis → hepatic flukes
(Fascioliasis)

Q pulmonary manifestation in the main signs in man in some zoonotic disease. Enumerate in table these disease with causative agent? 2007



Disease	Causative agent
① Rabies	F. Phabdomiridae G. lyssa virus.
② Toxoplasmosis	Toxoplasma gondii
③ Q. Fever	Rickettsia burneti
④ Visceral larva migrans	Toxocara canis Toxocara cati
⑤ Schistosomiasis	Schistosoma mansi Schistosoma japonicum
⑥ influenza	influenza virus type A, B
⑦ R.V.F	pan tropic arbovirus F. bunya viridae
⑧ paragonimiasis	Paragonium westermani

Q. Ingestion of lettuce or salade of watercress or water from irrigation canal produce Saprmetazoonosis?

(Fascioliasis)

Q. Enumerate in table disease causing skin affection with their causative agent. ??

Disease	Causative agent
---------	-----------------

Disease	Causative agent
① F. 	<i>Epithema viridae</i> → <i>G. aphthous virus</i>
②  Ulker's nodule	<i>F. Poxi viridae</i> <i>G. Parapox virus</i>
③ Vesicular stomatitis	<i>F. Rhabdo viridae</i>
④ Sindbis Fever	<i>F. Toga viridae</i> <i>G. Alpha virus</i>
⑤ Endemic typhus Fever	<i>Rickettsia typhi</i>
⑥ Boutonneuse Fever	<i>R. Conorii</i>
⑦ Rickettsial Pox	<i>R. acari</i>
⑧ African Trypanosomiasis	<i>T. gambiense</i> & <i>brucei</i>
⑨ Leishmaniasis	<i>Leishmania tropica</i> var <i>Minor</i>
⑩ Cutaneous larva migrans	3rd stage of <i>Angiostrongylus</i> <i>braziliense</i> .

Q. Animal parasite incriminated in Liver affection of Man?

→ Fish borne trematode → *Jamndice*, liver carcinoma
 → Fascioliasis → *F. hepatica* / *F. gigantica* → hepatic colic, cirrhosis
 → Toxoplasmosis → *T. Gondii* → hepatosplenomegally
 → Leishmaniasis → *L. donovani* → " " "
 → Visceral leishmaniasis → *Toxocara Cani* → hepatomegally
 → Hydatidosis → *Echinococcus granulosus* → " " & Ascitis
 → Amoebiasis → *Entamoeba histolytica* → liver Abscess.

Taeniasis

def → intestinal infection of man (FH) with adult worm of

- Taenia saginata & Beef Tapeworms
- T. Solium & pork Tapeworms

obligatory cyclozoosis

Etiology

→ T. saginata → larvae → C. bovis
→ L of Cattle → IH

→ T. solium → IH → pig
→ FH → man

* Reservoir & Source :-

→ infected beef or pork with Cysticerci (T. saginata & T. solium)

→ The infected beef or pork called → Measly beef or pork

* Mode of Transmission

① For T. saginata

human become infected after ingestion raw or undercooked infected Meats contain viable Cysticercosis

② For T. Solium

→ ingestion raw or inadequately processed pork containing Cysticercus Cellulosaeg eggs

→ intestinal infection with adult worm → Taeniasis

Cysticercosis

def → localization of larval stage of T. Solium → Cysticercus Cellulosaeg in different / tan tissue (somatic infection)

Etiology

→ larvae of T. Solium → Cysticercus Cellulosaeg

→ In act as accidental IH

* Source & Reservoir

→ Stool of infected person with T. Solium

* Mode of Transmission

→ ingestion eggs of T. Solium that passed in stools of infected person by →

auto-infection

→ ext. → dirty hands (hand to mouth)

→ internal → when gravid segment regurgitated into stomach & return back to intestine

→ egg hatch → larvae

Hetero-infection

→ eating food

→ drinking water that contact with human feces

* Signs in Man -

- IP → 8-12 wks
- loss Body. wt, low appetite
- digestive disorders
 - nausea, chronic indigestion
 - diarrhea.
- Abdominal pain.
- pruritis Ani
- Appendicitis due to lodgment of gravid segment into → appendicidal lumen
- seen gravid segment in infected person feces
- T. solium produce Mechanical Toxic & allergic condition.

* Signs in Man -

→ occur in various tissue acc. to site & heaviness of infection & →

1 Eye (ocular cysticercosis)

- vision disorder
- retinal dislocation
- blindness ⇒ gradual loss of vision

2 Brain -

- severe headache with vomiting & dementia
- progressive impairment of all aspect of brain Function (chronic brain syndrome)
- Epilepsy & hydrocephalus

* prevention & control -

* preventive measures -

- Education of the public to prevent food & water pollution with human stool & avoid sewage effluent to irrigation of pasture
- & cook thoroughly beef & pork
- meat either → disposed, or Frozen at $-5^{\circ}\text{C}/4\text{ days}$.
- proper meat inspection for cysticercosis in cattle & swine For condemn infected carcasses.
- hand washing before eating

* Control -

- identification of infected individual who → contact with A
- disinfection human stool by → boiling water, Chloroxydine, Ammonia water
- Patient with T. solium → prevent from food preparation
- Thorough washing hand after defecation & before eating.

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* Specific ttt \Rightarrow Albendazole \approx (Yomenzan)

\hookrightarrow give saline purgative at evening before ttt \Rightarrow empty stomach \Rightarrow give ttt effectiveness.

\hookrightarrow Yomenzan

\hookrightarrow in beef worm infection give 4 tablets for adult, children 6-16
 \hookrightarrow in pork " " \rightarrow 2 " \rightarrow children 2-6 years

2 of 5 (Echinococcosis) & (Hydatid dis) 2 of 6

\hookrightarrow infection of final host (dog) with
• Adult tapeworm of *E. granulosus*
(dwarf dog Tapeworm) \approx
• *E. multilocularis*
(T.ouse, or rat tapeworm)

\hookrightarrow infection IH (Non herbivorous)
with *E. granulosus* \approx Man
rather cause for *E. Multilocularis*
with larval stage of Tapeworm
 \hookrightarrow Hydatid cyst \Rightarrow Non delay
Cyclo toonitis

Etiology

\Rightarrow *Echinococcus granulosus*

* F.H \rightarrow dog.

Source

\hookrightarrow dog feces containing eggs of worm.

\hookrightarrow larval stages in infected organs \rightarrow lung liver.

Code

\hookrightarrow ingestion of vegetables or water contaminated with egg of worm.

\hookrightarrow flies \rightarrow mechanical vector to eggs

\hookrightarrow hand-to-mouth transfer, woman-to-man transfer

\hookrightarrow dog \rightarrow licking feces & skin contact with human

\hookrightarrow air borne infection \rightarrow by inhalation dust containing egg.

	²⁰¹⁵ Hymenolepiasis (dwarf Tape worm of Man)	²⁰¹⁵ Dipylidiasis	²⁰¹⁶ Diphyllbothriasis
Etymology	<p>→ <i>Hymenolepis nana</i> → Man to → rodent</p> <p>→ <i>H. diminuta</i> → accidentally lan</p> <p>* direct life cycle</p> <p>* IH → Fleas, Lice</p>	<p>→ <i>dipylidium Caninum</i></p> <p>* definitive host → dog, cat</p> <p>* IH → dog Flea cat Flea Human Flea</p> <p>* indirect life cycle</p>	<p>→ <i>diphyllbothrium latum</i> (broad Fish Tape worm)</p>
Reservoir	rat, Mice, Man		Fish eating mammals (dog, cat, pig, Man)
Mode	<p>Mode</p> <p>→ ingestion of eggs directly → ext. auto infection</p> <p>→ ingestion of egg indirectly through contaminated food or water with feces of infected Man, rat, Mice</p> <p>→ Accidental ingestion of rat flea containing cysticercoid (infective stage)</p>	<p>→ Man infected by accidentally ingestion of IH containing cysticercoid</p>	<p>→ ingestion raw or insufficiently cooked infected fish contains plerocercoid larvae</p>
Source	<p>Source</p> <p>→ Stool of infected person, rat</p> <p>→ rat flea (<i>x. cheopis</i>) containing cysticercoid.</p>	infected dog flea or cat flea.	<p>→ Flesh of infected fresh water fish</p> <p>→ stool of human or mammals eating infected fish.</p>

→ IP → 2-4 wks
 * signs absent & appear only in heavy infection.

→ GIT disturbance.

- Abdominal pain, diarrhea
- non-ch symptom
- neurogenic signs
- sleeping restless
- pruritis anal or nasal

Q Compare bet.

Cysticercus

- larva of *T. solium* & *T. saginata*
- cystic larva
- has inverted scolex
- found in MU of pig, cattle

Cysticercoid

- larva of *H. nana* & *H. diminuta*
- solid larva
- everted scolex
- in body cavities of insect or upper part of intestine of Ton.

* Taenylinfect → infants or young children

→ oligerlive disturbance

→ white proglottids (gravid segment) noticed by patient

- Anal pruritis, Colic
- diarrhea, Ascites

→ IP → 3-6 wks

→ edema, jaundice, hemorrhage

→ True symptomatic pernicious anemia or megaloblastic anemia → Macrocytic, Normochromic anemia.

→ Mechanical obstruction of intestine, digestive disorder debilitating & loss feeding

in case patient harbor large No. of worms
 → MCV, MCH, but MCHC Normal

① Combating Pleas on pets & administering Taenra fuge or Taeniacides to definitive host

② Yomensen → effective ttt

→ thorough cooking fish to 56°C/s or freezing at -10°C 12 days

→ Sanitary disposal of feces

→ prevent stream or lake pollution with feces of fish eating mammals

→ not feed domestic A. raw fish

ttt of Man Yomensen

→ ttt of dog → Arecoline hydrobromide

→ give vit B12 in case of pernicious anemia

Snail Fever

Shistosomiasis (Bilharziasis, bil. flukes)

Fascioliasis (Liver rot, hepatic fluke)

Etiology

- *Shistosoma haematobium*
- " *Japanese*
- " *mansoni*

F.H. Adult in

- *S. haematobium* → man only
- *S. japonicum* → All spp.
- *S. mansoni* → Man, Monkey, rodent.

(NB) Man Made disease or rural disease

- *Fasciola hepatica*
- *Fasciola gigantica*

Reservoir

Monkey, rodent.

Life cycle

- *Location:-
- S. haematobium* → veno-plexus of U.B, pelvis, ureter
 - S. japonicum* → mesenteric v. of small intestine
 - S. mansoni* → mesenteric v. of large intestine.

Egg → in fresh water due to defecation in it → egg contain.

Zygote → 1st I.H (snail)

Cercaria infective stage

*Snail:-

- *S. haematobium* → *Bulinus*
- *S. japonicum* → *Onchomelania*
- *S. mansoni* → *Biomphalaria*

*Location:-

- Adult in Bile duct of ruminant & horse, rabbit

Adult in bile duct of infected cow or A → eggs in Feces

→ 1st I.H snail (as)

(*Lymnaea caillandii* & *L. stagnalis*)

2nd I.H (vegetable) vegetation (green grass)

↓
encysted metacercaria on water cress → ingestion of unwashed grass → in duodenum (immature fluke) → liver capsule → Migration & saturation → Bile duct. → egg in Feces → repeat cycle

Mode of Transmission	penetration of skin of Man in fresh water → leave tail & head → enter through sebaceous gland & hair follicle → forming → immature schistosoma → 31 stream → lung → bl. circulation → liver → maturation & sexual mating → laying eggs → lead to thrombosis → localization in organs	ingestion of infected vegetation
Clinical Signs	Swimmer itch & bathing itch parasitic pneumonia (cough) hepatitis, pain in right abdomen diarrhea, hepatosplenomegaly hematuria → dysuria polypars → thickening in lumen of affected organs	Anemia, diarrhea Abdominal pain colitis, colistasis thickening of bile duct Jaundice Haemorrhoids (Hd) → dysphagia, dyspnea, death due to ingestion raw liver contain mature flukes (pharyngeal schistosomiasis)
Prevention & Control	eradication of snail → physical, chemical, biological public health education praziquantel or biltracid 2014 Swimmer itch pathogenesis of cercaria (Key)	Schistosomiasis + ① washing green vegetation by acetate. ② proper cooking of liver ③ hygienic disposal of feces ④ HTA → can with Mirazid parasite disease transmitted by ingestion?

Fish Flukes → disease transmitted from fish to human Mean Ichthyozoonoses
 Trematode transmitted through fish → 2009, 10, 11, 12, 13, 14, 2016

① Clonorchiasis ② Opisthorchiasis ③ Paragoniasis ④ Heterophiasis

Caused by → Clonorchis sinensis (Chinese liver fluke)
 • opisthorchis felinus (cat liver fluke)

* pathogenesis :-

→ Adult present in bile duct, pancreas, gall bladder of Man & A. excreted of egg infers → 1st IH (Bulinidae family)
 → 2nd IH (fresh water fish → Tilapia, Mugil, carp) → Final Host.

Mode of Transmission

→ ingestion raw or uncooked well or unwell salted fish or salted infected water fish

Clinical Signs

→ anemia, jaundice, emacration, liver carcinoma

Prevention & Control

→ as schistosoma + well cooking fish

Caused by → paragonium westermani
 → 1st IH → gastropod snail
 → 2nd IH → Crabs or Cray fish
 → infected stage → encysted metacercaria

* Mode → ingestion raw crabs

Disease in Man

Main vesp. sign → Cough, thoracic pain, bl. tinged viscous sputum
Maybe cerebral paragoniasis → Gas cerebral, cysticercosis, headache, convulsion, epilepsy, visual disorder

* prevention & control → as schistosoma.

* Caused by → H. heterophy
* Reservoir → man, fish eating m.
* Mode → ingestion raw fish
* pathogenesis → 1st Fresh Salted ingestion of raw fish → S. intestine of Man or fish eating mammals → Adult worm → egg → 1st IH (Pirinea conica) → Cercaria → 2nd IH (fresh water fish) → encysted Metacercaria (infective stage) in gills, i. of fish

* disease in Man

→ intermittent bloody mucous diarrhea
 → Abdominal discomfort
 → Anemia
 → Antoman not occur

* prevention & control as schistosoma

→ health education
 → Salted fish not used before 10 days of salting

2014	2016 Trichinellosis	2016 Anisakiasis
Cause	Trichinella spiralis (سپیروئید)	F. Anisakidae → larval stage of Ascaridoid Nematode.
Reservoir	(pig), rats, wild A. & Fox	Fish eating mammals.
Source	pork & pork byproduct.	marine fish contain 3rd stage larvae.
Mode	ingestion of Fresh A. infected with Trichinella cyst or 1.0 viviparous ♀ (No egg in feces) but larvae in lymph, BL & encysted in M.	ingestion of marine fish containing 3rd stage larvae
Clinical Signs in	<div> <div>A) Intestinal trichinosis</div> <div> Due to invasion of intestinal wall causing inflammation, Hemorrhage Signs as • GIT disturbance • Vomition • Fever • weakness </div> </div> <div> <div>B) Muscular</div> <div> 1. pain arrhythmia severe intoxication & allergy edema of eye lids & ocular pain, retinal hemorrhage, photophobia. </div> </div>	sudden epigastric pain nausea, Vomition eosinophilia, Eosinophilic granuloma severe pain in lower Abdomen eosinophilic granuloma in mesenteric vein
Prevention & Control	Thorough Meat inspection by Trichinoscope health education good cooking pork Meat & byproduct at 77°C or Storage at -15°C eradication of rats HT → thiabendazole + Saline purgative + cortisone Ca + vit D → For Calcification of encysted larvae symptomatic HT by corticosteroids	thorough cooking fish cleaning & evisceration fish to prevent Migration of larvae then good hygienic disposal evisceration Salting of fish well

Cutaneous larva Migrans		Visceral larva Migrans	
Cause	3rd stage larvae of <i>Anthelmintoma braziliense</i>	<i>Toxocara canis</i> & <i>Toxocara cati</i>	
Reservoir	Man, dog, cat	* dog, wild canines	
Source	humid soil contaminated with feces of infected dog, cat	* soil contaminated with eggs of parasite	
Mode	Man infected by direct contact with contaminated soil with feces of dog, cat	* ingestion of embryonated egg with contaminated food, water	
Signs in Man	<ul style="list-style-type: none"> → at site of larvae entry → papule formation on hand, feet, legs → highly pruritic & tunnels formation due to migration of larvae in deeper layer of skin → erythematous lesion 2nd bact. infection result from scratching → self limiting disease 	<ul style="list-style-type: none"> → Skin rash, Fever, Cough → larvae produce → Multiple Abscess, granulomas with <ul style="list-style-type: none"> • eosinophilia • hepatomegally • asthmatic attack. • arthritis & myositis → Ocular larva Migrans & <ul style="list-style-type: none"> • sudden loss of vision • retinoblastoma with strabismus • blindness. 	
Prevention & Control	<ul style="list-style-type: none"> → periodic anthelmintic ttt of dog, cats → elimination of stray A → dogs, cats not allowed in beach → antibiotic used for 2nd bact. inf. use <u>ethiobenzazole</u> 	<ul style="list-style-type: none"> → health education → personal hygiene → elimination of stray A → prophylactic ttt of puppies with <u>piperazine</u> or <u>levamisole</u> 	

	① West Nile fever (WNV)	② Sindbis fever	③ dengue haemorrhagic fever (DHF)	④ Crimean-Congo haemorrhagic fever (CCHF)
Cause	RNA Arbovirus Togaviridae		G. Flavivirus / arbovirus	G. Bunyavirus
Reservoir	wild & domestic	Bird	Man	Cattle, sheep, wild b.
Source	infected Mosquitoes → Culex, Aedes	infected Mosquitoes → Culex	infected Mosquitoes → Aedes aegypti	infected tick → Hyalomma, Dermacentor
Mode	① Natural cycle → (Bird → Mosquito → bird) ② Accidental inf. to Man → Mosquito → Man → Mosquito	① natural → Bird → Mosquitoes ② Accidental in Man.	① Natural → Man → Mosquito ② wild cycle → primate → Mosquito → primate	→ bite of infected tick → From diseased animal during slaughter → nasocomical infection during castration or ear tagging
Signs & Symptoms	<ul style="list-style-type: none"> → Fever, frontal headache, chest, back pain → throat irritation → aching of eye (sore) → skin rash → meningitis, encephalitis → lymphadenitis 	<ul style="list-style-type: none"> → Fever, headache, nausea, articular pain, periocular pain, vomiting, sore throat, lymphadenospatting. → Jaundice → In severe cases → Maculopapular eruptions on trunk & vesicles on hand palm, feet → acute obs → disappear rapidly 	<ul style="list-style-type: none"> → sudden onset fever, headache → Nausea, vomiting, sore throat → joint, retro-orbital pain → diphasic fever → general erythema → Maculopapular rash on trunk, body → lymph N. enlarged → photophobia → Hemorrhage → severe, fatal → tropic asia → Start as fever then Hemorrhage → hypotension → shock → death → mainly in children. → Control as Sindbis 	<ul style="list-style-type: none"> → vertigo → diffuse myalgia → Neck, abd. pain → photophobia → hypotension of facial neck → leukopenia → thrombocytopenia → Hemorrhage in petechiae & ecchymosis, epistaxis → death.
Prevention & Control	<ul style="list-style-type: none"> ① destruction of Mosquitoes ② pupal eradication ③ Formalin vaccine or passive immunization by hyperimmune serum ④ IAC-ELISA 	<ul style="list-style-type: none"> ① ② ③ Control vector. 		